

CLAIMS

- 1 1. A hybrid matching system for use with a transmitter and receiver, said hybrid matching
2 system comprising:
 - 3 a pair of transmitter output nodes for providing a differential transmitter signal for
4 transmission;
 - 5 a pair of receiver input nodes for receiving a differential received signal;
 - 6 a pair of line terminals to interface with a transmission line;
 - 7 an impedance bridge network for coupling said transmitter output nodes to said line
8 nodes via at least one transformer winding; and
 - 9 a supplemental network interposed between said pair of transmitter output nodes and said
10 impedance bridge network, and interposed between said pair of receiver input nodes and said
11 impedance bridge network, said supplemental network including a bridge network.
- 1 2. The hybrid matching system as claimed in claim 1, wherein said supplemental network
2 includes a transmitter path network and a receive path network.
- 1 3. The hybrid matching system as claimed in claim 1, wherein said supplemental network
2 includes a bridge formed by a first pair of impedance units and a second pair of impedance units
3 with said bridge being formed by one of each of said pairs of impedance units being in series
4 with one of the other of each of said pairs of impedance units.

1 4. The hybrid matching system as claimed in claim 3, wherein said first pair of impedance
2 matching units have an impedance value that is equal to one another, and said second pair of
3 impedance matching units have an impedance value that is equal to one another.

1 5. The hybrid matching system as claimed in claim 3, wherein at least one of said first and
2 second pairs of impedance matching units includes resistive and capacitive values.

1 6. The hybrid matching system as claimed in claim 1, wherein said impedance bridge
2 network does not include a capacitor.

1 7. The hybrid matching system as claimed in claim 2, wherein said receive path network
2 includes attenuation means for attenuating the receive signal to a desired value.

1 8. The hybrid matching system as claimed in claim 7, wherein said attenuation means is
2 frequency independent.

1 9. The hybrid matching system as claimed in claim 7, wherein said attenuation means
2 includes a summing stage.

1 10. A hybrid matching system for use with a transmitter and receiver, said hybrid matching
2 system comprising:

3 a line impedance network for coupling a pair of transmitter output nodes to a pair of
4 transmission line nodes via at least one transformer winding for communication with a
5 transmission line, and including at least one line impedance unit having a value Z_m ;

6 a supplemental matching network interposed between said line impedance network and
7 a pair of transmit output nodes, said supplemental matching network including at least one
8 supplemental impedance unit having a value kZ_m ; and
9 a receive path coupling network interposed between said line impedance network and a
10 pair of receive input node.

1 11. The hybrid matching system as claimed in claim 10, wherein Z_m has a resistive value
2 only.

1 12. The hybrid matching system as claimed in claim 10, wherein said receive path coupling
2 network is frequency independent.

1 13. The hybrid matching system as claimed in claim 10, wherein said line impedance bridge
2 portion does not include a capacitor.

1 14. A hybrid matching system for use with a transmitter and receiver, said hybrid matching
2 system comprising:

3 a line impedance network including at least one inductor for coupling via at least one
4 transformer winding to a pair of line nodes for communication with a transmission line, and for
5 coupling via a pair of receive signal nodes (A, B) to a receive path network;

6 a two-port network interposed between said line impedance network and a pair of
7 transmitter output nodes, said two-port network for coupling via a pair of cancellation nodes (C,
8 D) to said receive path network; and

9 said receive path network coupled to said receive signal nodes (A, B) of said line
10 impedance network, coupled to said cancellation nodes (C, D) of said two-port network and
11 coupled to a pair of receiver input nodes for providing a differential receiver input signal to
12 reduce echo from said transmitter output nodes from being present at said receiver input nodes.

1 15. The hybrid matching system as claimed in claim 14, wherein said line impedance
2 network includes a line impedance unit having a value of Z_m , and said two-port network
3 includes a supplemental impedance unit having a value of kZ_m .